

# **Pro-Series**

# **Energy Recovery Ventilators**

Airflow capacities from 500 to 10,000 cfm

## ***Operations Guide***



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## Pro-Series

ERV Systems' Pro-Series of outdoor air ventilators have been specifically designed to reduce the energy required to heat and cool outdoor air by as much as 80 percent. This unique capability allows both new and existing buildings to benefit from a healthy indoor environment by supplying high amounts of outside air in a very cost-effective manner.

The Pro-Series unit allows HVAC systems to effectively and economically accommodate the increased outdoor air quantities recommended by the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 62. This standard guides the amount of ventilation air that should be introduced to a building to achieve acceptable indoor air quality.

The Pro-Series system is a packaged system which includes supply and exhaust air fans, outdoor and return air filtration, and ERV's total energy recovery wheel. The wheel recovers both sensible (temperature) and latent (moisture) energy. Therefore, it cools and dehumidifies the outdoor air during the cooling season, while heating and humidifying the air in the heating season.

The wheel utilizes a fluted aluminum sheet that is coated with a fast-acting, adsorbent desiccant. As the transfer media slowly rotates between the outdoor and exhaust air streams, the higher temperature air gives up its sensible energy to the aluminum. This energy is then given up to the cooler air stream during the second half of the revolution. (See Figure 1.)

Just as the temperature is captured and released, so is the moisture. The molecular sieve desiccant coating has a strong attraction to water vapor. Since the opposing air streams have different temperature and moisture contents, they also have different vapor pressures. This difference provides the driving force that causes the transfer of latent energy.

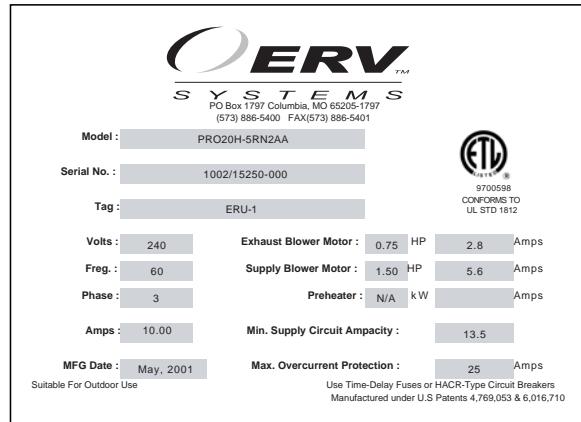
Through the use of a desiccant coating, moisture is recovered from an exhaust air stream without transferring the airborne pollutants contained within the exhaust air-stream to the supply air stream.



**Figure 1.** An inside view of the Pro-Series Preconditioner with typical operating temperatures during the cooling (C) and heating (H) season respectively.

## Model Description

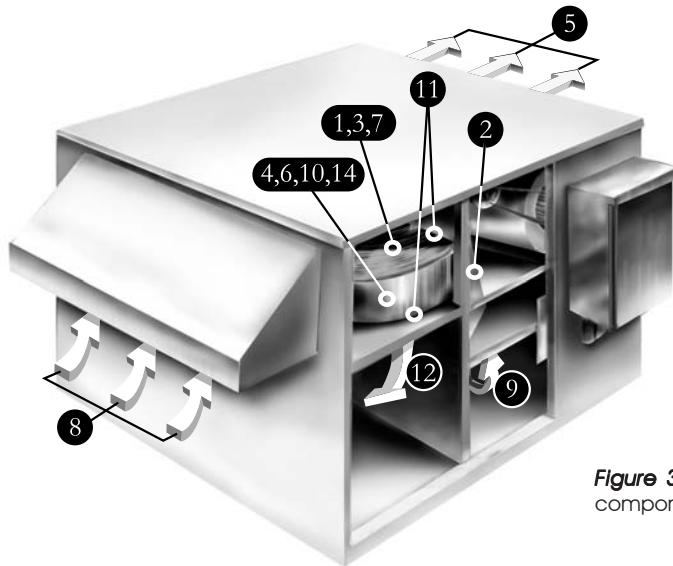
On the front of the Pro-Series unit is an identification label. The specifications on the label correspond to the actual unit. The model number (Pro-6, Pro-10, Pro-20, etc.) refers to the nominal air volume (cfm) that the Pro-Series ventilator supplies to the space.



**Figure 2.** Typical Pro-Series nameplate with electrical data.

## Definitions

- 1 **Adsorption** – The physical bonding of water vapor on the surface of the desiccant.
- 2 **Cassette** – The framework supporting the wheel. (See also *Wheel*.)
- 3 **Desiccant** – A naturally occurring or man-made material with a high affinity for water vapor. ERV uses a desiccant material which minimizes cross contamination.
- 4 **Enthalpy wheel** – A common term used to describe all rotating, wheel-shaped heat transfer devices that exchange sensible (temperature) and latent (water vapor) energy from one airstream to another. The word, enthalpy, means heat content or total heat. The term, enthalpy exchanger, may also be used.
- 5 **Exhaust air** – The air from indoors that passed through the energy recovery wheel and is being ducted outdoors.
- 6 **Heat wheel** – This generally describes all rotating devices which transfer only sensible energy.
- 7 **Media** – The corrugated material inside the wheel.
- 8 **Outdoor air** – The fresh outside air that is being drawn in the energy recovery wheel. Once it passes through the wheel it becomes the supply air.
- 9 **Return air** – Air from the indoor space that is pulled through the energy recovery wheel. Once it passes through the wheel it is referred to as exhaust air.
- 10 **Rotor** – The media-filled wheel that rotates. It transfers heat energy and water vapor from one ducted airstream to the other. Often, the rotor will be referred to as a wheel.
- 11 **Seal** – The soft material that closely surrounds the rotor to limit the amount of bypass air around the rotor.
- 12 **Supply air** – Air provided to the indoor space. Outside air that passes through the energy recovery wheel becomes supply air.
- 13 **Unit** – Used frequently throughout this manual to mean the energy recovery wheel and attendant components such as cabinets, motors, fans and other parts that work together to make an effective energy recovery product.
- 14 **Wheel** – Refers to the rotating wheel containing the coated media. The stationary framework supporting the wheel is the wheel cassette.



**Figure 3.** Typical Pro-Series unit with components highlighted per definitions above.

## Receiving & Inspection

Upon delivery, confirm that the quantity and model(s) received matches the Bill of Lading. If there is any discrepancy, immediately notify ERV Systems Incorporated.

Inspect the skidded unit(s) for signs of damage. If damage is suspected, sign the Bill of Lading "damaged." If no visible damage is apparent, the unit should be properly lifted and stored until installation.

While skidded, the Pro-Series unit, models Pro-6 through Pro-50, can be lifted by a forklift using the skid. The Pro-75 and Pro-90 models must be lifted from the skid by the use of spreader bars. Once removed from the skid, lifting must only be performed with spreader bars, cable and hooks. Do not attempt to lift the unit by grasping the hoods.

Note: The packaged unit weighs approximately 100 lbs. more than the net weight, noted below.

Model	Net Weight (lbs.)
Pro-6	450
Pro-10	500
Pro-20	550
Pro-30	1,000
Pro-40	1,150
Pro-50	1,150
Pro-75	1,800
Pro-90	1,800

## Storage

If the Pro-Series is to be stored for any time before installation, it must be protected from the weather. Indoor storage is recommended. The unit has openings provided for ducting. These openings make the internal equipment (motors, belts, fans and insulation) vulnerable to inclement weather conditions (prior to installation) and can cause standing water to accumulate inside the enclosure. This is to be absolutely avoided.

## Lifting Technique

When rigging the Pro-Series unit, spreader bars must be used. Padding must be inserted between the straps and the unit to avoid scratching the paint. Lifting holes are provided at four points located on the base perimeter of the unit.

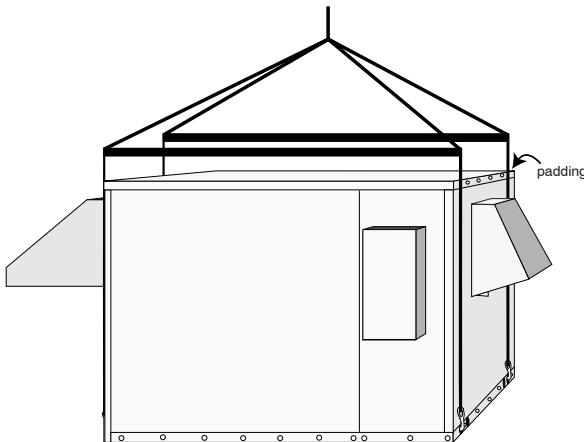
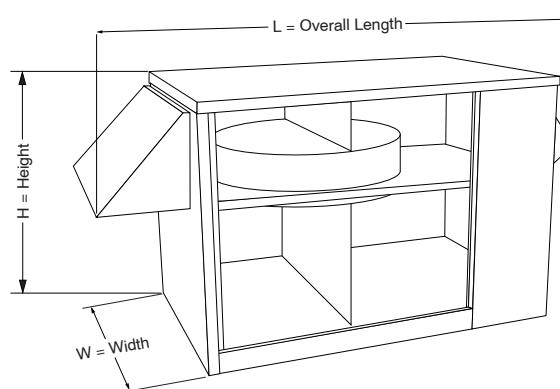


Figure 4. Correct lifting technique using spreader bars.

## Overall Dimensions



Model	L	H	W
Pro-6	69.5	31.0	29.0
Pro-10	69.5	31.0	29.0
Pro-20	80.6	32.4	37.0
Pro-30	96.0	47.7	45.0
Pro-40	126.5	51.5	54.0
Pro-50	126.5	51.5	54.0
Pro-75	143.0	58.6	64.6
Pro-90	143.0	58.6	64.6

Dimensions in inches.

## Installation

Installation of the Pro-Series is a relatively simple procedure, but should be undertaken in a methodical fashion, following the directions outlined in this manual.

**Note:** Prior to starting unit, open access door and;  
Remove loose parts shipped inside;  
**Remove wheel shipping restraint (Pro-30 thru Pro-90 only)**

The installation location should be chosen to provide easy, convenient access. As with all mechanical equipment, routine maintenance and inspection is necessary. Choose a site from which connecting duct is visible. Avoid locations that are near or downwind of smoke, fumes or exhaust outlets of other equipment. The front access panel should have clearance space equal to the depth of the unit to allow for service.

Once the installation location is determined, the unit should be skidded and closely examined. Any defects or problems should be reported to ERV Systems Incorporated immediately.

Several ducting arrangements are possible. Make sure your duct plans match the Pro-Series duct opening arrangement. (See Unit Configuration, pg. 5)

The Pro-Series unit can be ordered for indoor or outdoor installation. An outdoor unit is identified by the existence of two hoods that are shipped on top of the unit. It will be necessary to attach the outdoor air intake hood (larger one with filter rack) and the exhaust air outlet hood (smaller one with damper) on their designated openings (see figure 6a-d). The indoor unit is identified by a rectangular duct shipped on top of the unit. This indoor intake duct must be installed over the outdoor air intake opening (see figure 6a-d). Use the given alignment holes to place the hood or duct in the correct position.

If the unit is a rooftop unit, it may be installed on a curb. If ERV Systems supplies the curb, it is shipped separately. The curb must be installed before a rooftop Pro-Series unit can be placed. Proper care should be taken to ensure correct placement of the curb before holes are cut for ducting through the roof itself. Effective waterproofing of the rooftop interface is necessary. That means sealing around the roof curb to prevent any leakage into the building or the air ducts. The curb and unit must be installed and operated in a horizontal position.

If the unit is not installed on the roof, then a concrete or paved pad to support the Pro-Series must be provided. The pad must be of sufficient height and located to assure proper water drainage in any weather.

Inspect the interior of the unit for any damage. On the floor inside the unit is the outdoor air metal filter. This filter is to be installed at the outdoor air intake opening after the hood (outdoor Pro-Series only) has been attached. On the Pro-Series 30, 50, and 75 remove wheel shipping restraint.

The ERV energy recovery wheel is mounted horizontally inside the Pro-Series. The motor and belt arrangement that turn the wheel are visible next to the wheel at the access panel opening. The motor wires running to the control panel are attached by a quick release disconnect. The quick disconnect must be separated before sliding out the wheel cassette. The wheel cassette need not be moved for installation or hookup, but it can be pulled out for easy maintenance and inspection purposes.

When the unit has been placed in its permanent location, ductwork should be brought up to and attached to the unit. Ductwork may be flanged and screwed to the unit face for horizontal connections. Ductwork for a vertical unit should be flanged and gasketed level with the curb to allow the unit weight to form the seal. Penetrations through the unit floor must be avoided to prevent any water penetrating into the cabinet.

If the unit has been ordered with electric preheat, it is shipped installed. The main power connection to the unit is made at the electric coil instead of the unit control panel. For the indoor version of the Pro-Series, the electric coil should be externally insulated after installation.

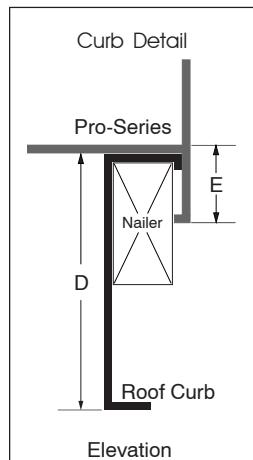
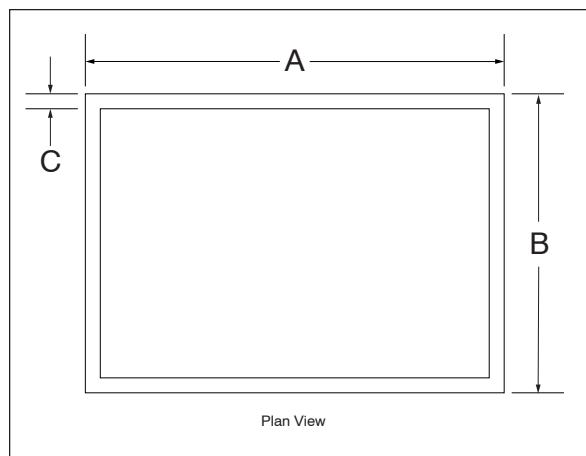
On the front right side of the Pro-Series is the unit identification tag. It states the electrical requirements for the unit. (If electric preheat option has been ordered, the unit ID tag is located on the heater.) Make sure the power provided to the installation site matches that required by the unit. Note and verify that voltage/phase/capacity needed and provided are the same, and the line voltage must not vary more than +/- 5%.

## Curb Mounting

The Pro-Series is generally installed on a curb (unless mounted indoors). The curb ships separately for preinstallation to simplify rigging. The dimensions of the curbs required for the Pro-Series units are listed below.

All Pro-Series configurations have the same curb dimensions. The curb for a Pro-Series unit can be provided by ERV Systems or purchased from a curb manufacturer provided it is designed to support the weight of the Pro-Series unit specified in this manual and conforms to the dimensions listed in the table below.

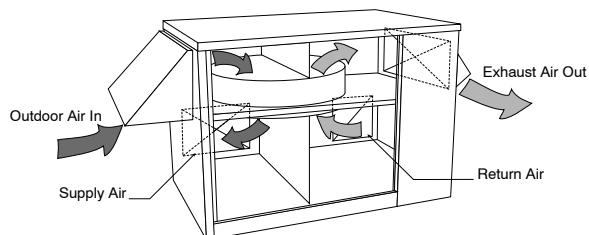
**Figure 5.** Curb dimensions.



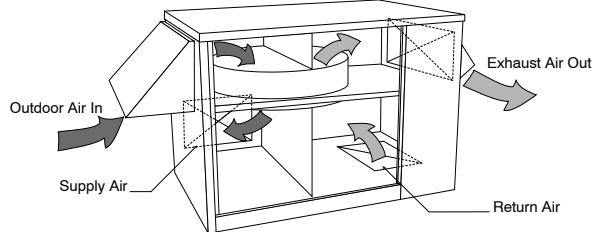
Model	A	B	C	D	E
Pro-6	40.1	25.0	1.7	14.0	3.0
Pro-10	40.1	25.0	1.7	14.0	3.0
Pro-20	47.4	33.0	1.7	14.0	2.0
Pro-30	60.6	41.0	1.7	14.0	3.0
Pro-40	74.6	49.9	1.7	14.0	3.0
Pro-50	74.6	49.9	1.7	14.0	3.0
Pro-75	91.6	60.3	1.7	14.0	3.0
Pro-90	91.6	60.3	1.7	14.0	3.0

## Unit Configuration

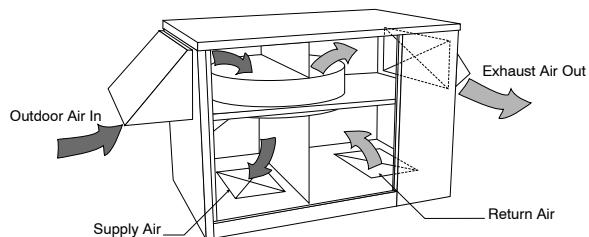
The Pro-Series ventilator can be installed in one of four possible configurations depending on the arrangement of the supply and return air openings.



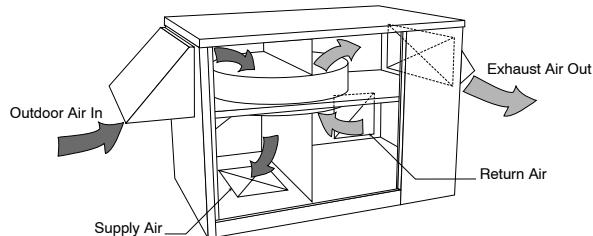
**Figure 6a.** H Class configuration with horizontal supply air and horizontal return air duct arrangement.



**Figure 6b.** HS Class configuration with horizontal supply air and vertical return air duct arrangement.



**Figure 6c.** V Class configuration with vertical supply air and vertical return air duct arrangement.



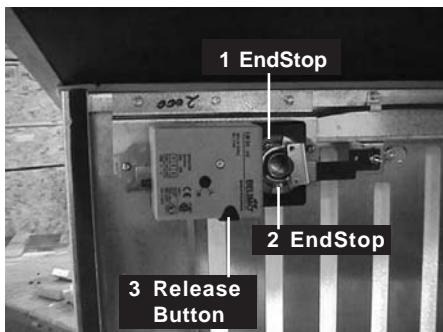
**Figure 6d.** VS Class configuration with vertical supply air and horizontal return air duct arrangement.

## Supply & Exhaust Airflow Dampers

All outdoor Pro-Series units have airflow dampers on the outdoor air intake and exhaust air outlet that are field adjustable.

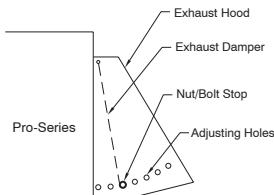
All indoor Pro-Series units have airflow dampers on the outdoor air intake only. The exhaust air damper is duct mounted, and provided by the contractor.

To adjust the outside airflow damper, turn the unit off and open the access panel. Locate the outside airflow damper actuator inside the unit on the left side. Loosen the two end stops ① and ② with a No. 2 Phillips head screwdriver. Move the stops to the desired positions and retighten the screws. To test the correct position of the stops, while depressing the release button ③ on the actuator, move the damper to the fully open and closed position. Readjust the stops as necessary. The actuator will automatically open the damper to the set position whenever the unit is running and will close the damper to the set position when the remote unit start/stop (by others) is off. Note, the actuator needs power to close, therefore it is not recommended that the unit be turned off by disconnecting the power to the unit. This may leave the actuator in an open position, which may not be desirable.



**Figure 7.** Location of the outside air damper and optional actuator.

To adjust the exhaust airflow damper, turn the unit off and remove the nut/bolt stops on both sides of exhaust hood. Reposition the nut/bolt stops in the desired adjusting holes and retighten. Be sure to use matching adjusting hole on both sides of the exhaust hood. Readjust the stops as necessary to obtain the desired airflow. The exhaust airflow damper will automatically open to the set position when the exhaust fan is on, and close when the exhaust fan is off.



**Figure 8.** Diagram of exhaust hood damper.

## Controls

### Basic Package

The basic Pro-Series unit ships with no controls. The standard wiring package provides connections for the starting/stopping of the complete unit, supply fan and the energy wheel. The connections are shipped with factory jumpers installed. Remote control of any of these options can be achieved by removing the correct factory jumper and installing a contact in its place. The contact should be capable of handling 24V power at 2 amps. (See appropriate 1Ø or 3Ø circuit diagram on pages 8 thru 12). It is strongly recommended that a remote unit start/stop contactor (supplied by others) be used to turn the unit on and off. This allows the outdoor air damper to fully close when the unit is off.

### Optional Electric Preheat Frost Control

For applications where the outdoor conditions do not exceed -10°F and where the indoor design conditions do not exceed 70°F and 25 percent RH, the energy wheel can operate at full capacity and will not frost. For colder design conditions or buildings with higher humidity levels, frosting of the wheel can be prevented by providing a modest amount of preheat to the outdoor air. The amount of preheat required is small and is not intended to raise the outdoor air temperature above the freezing point. It is only necessary to keep the exhaust air temperature above the dew point. This prevents condensation on the wheel so that all the moisture transfer occurs in the vapor phase.

The preheat control option includes a finned tube electric coil mounted on the outdoor air intake of the unit, an SCR controller and a temperature sensor mounted in the outdoor air plenum. The temperature for the controller is set to the minimum temperature of the outdoor air required to prevent condensation at the design indoor temperature and humidity. This is done by plotting a line on the psychrometric chart from the indoor design condition down to the coldest temperature that does not cause the operating line to intersect the saturation curve on the chart. As stated above, for inside conditions of 70°F and 25 percent RH, this temperature is about -10°F.

## Optional Stop/Jog Economizer and Wheel Frost Protection (SMX70 Controller)

The stop/jog economizer option is used during moderate outdoor air temperatures to stop the recovery wheel. The jog function is included to allow the wheel to rotate periodically to self-clean.

When the outdoor temperature is between 55°F (the cooling coil supply air temperature) and 75°F (the space return air temperature) the wheel will raise the outdoor air temperature which will add slightly to the space sensible load. At the same time, if the outdoor humidity level is higher than the space humidity level, the recovery wheel will dehumidify the fresh air slightly reducing the space latent load. If the local climate is such that these intermediate temperature days occur mostly at moderate humidity conditions, the stop/jog economizer can eliminate the heating of the outdoor air and provide some free cooling to the space.

The stop/jog economizer consists of a temperature sensor and a circuit board with dip switch selection of temperature and stop/jog times. When the outdoor temperature is in the range between the two setpoints, the timer relay operates the wheel for approximately 30 seconds in every 30 minutes.

The SMX-70 board also has the ability to put the wheel in stop/jog mode when the outdoor air temperature drops below a preset value. This is a lower cost option than the electric preheat. It also has the disadvantage in supplying untreated outdoor air into the ventilation system whenever the stop/jog activates.

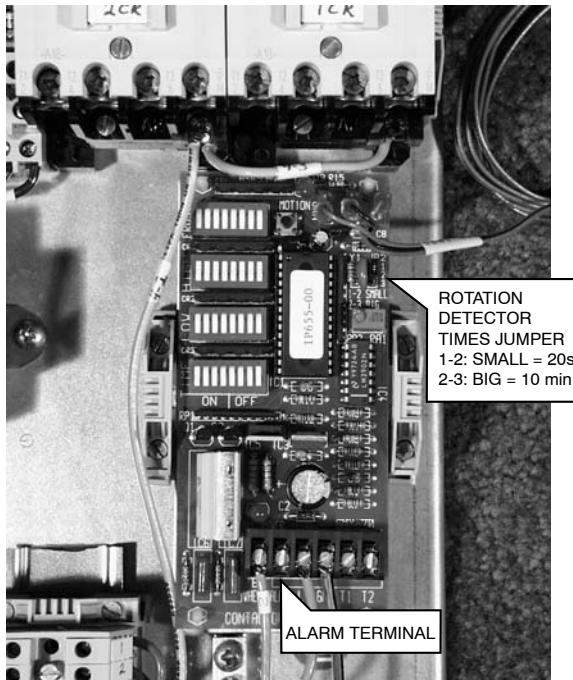


Figure 9. SMX70 controller as installed on the electric panel.

## Optional Rotation Detector Sensor

The SMX70 stop/jog economizer board is supplied with a motion detector to monitor the rotation of the energy recovery wheel. The sensor is a hall effect device that senses the passage of a small magnet on the perimeter of the rotor. When the sensor fails to register any wheel rotation - it requires a signal every 20 seconds or 10 minutes depending on the mode of operation - it energizes the alarm terminal (24 VAC, .3 amp max) of the SMX70 board. This can be used to operate a relay (to be supplied by others) for remote indication of the alarm. The sensor will not create a false alarm when the SMX70 controller is in stop/jog mode.

The alarm resets itself once the wheel begins to turn or the system is shut off and restarted.

Please note that the triac output for the alarm signal requires a load, such as a contactor coil, to operate. This output may not register on a digital multimeter without the load, or may cause a lamp with no limiting resistor to light dimly.

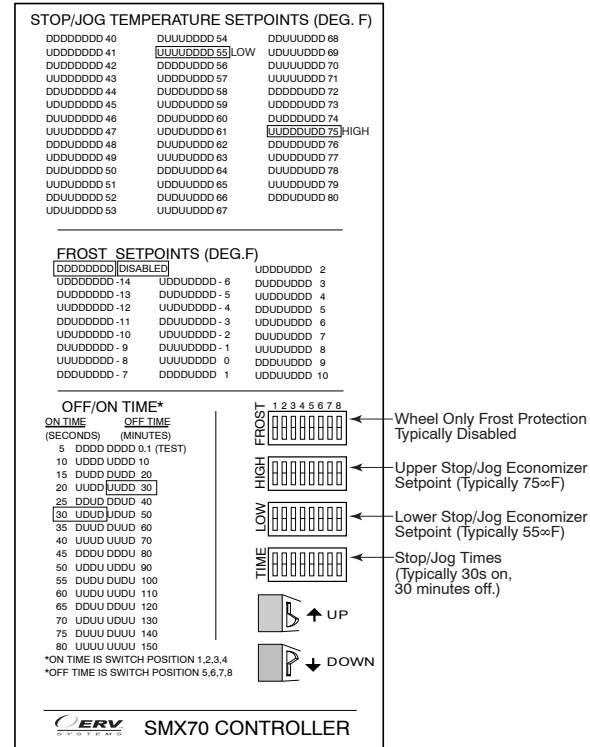
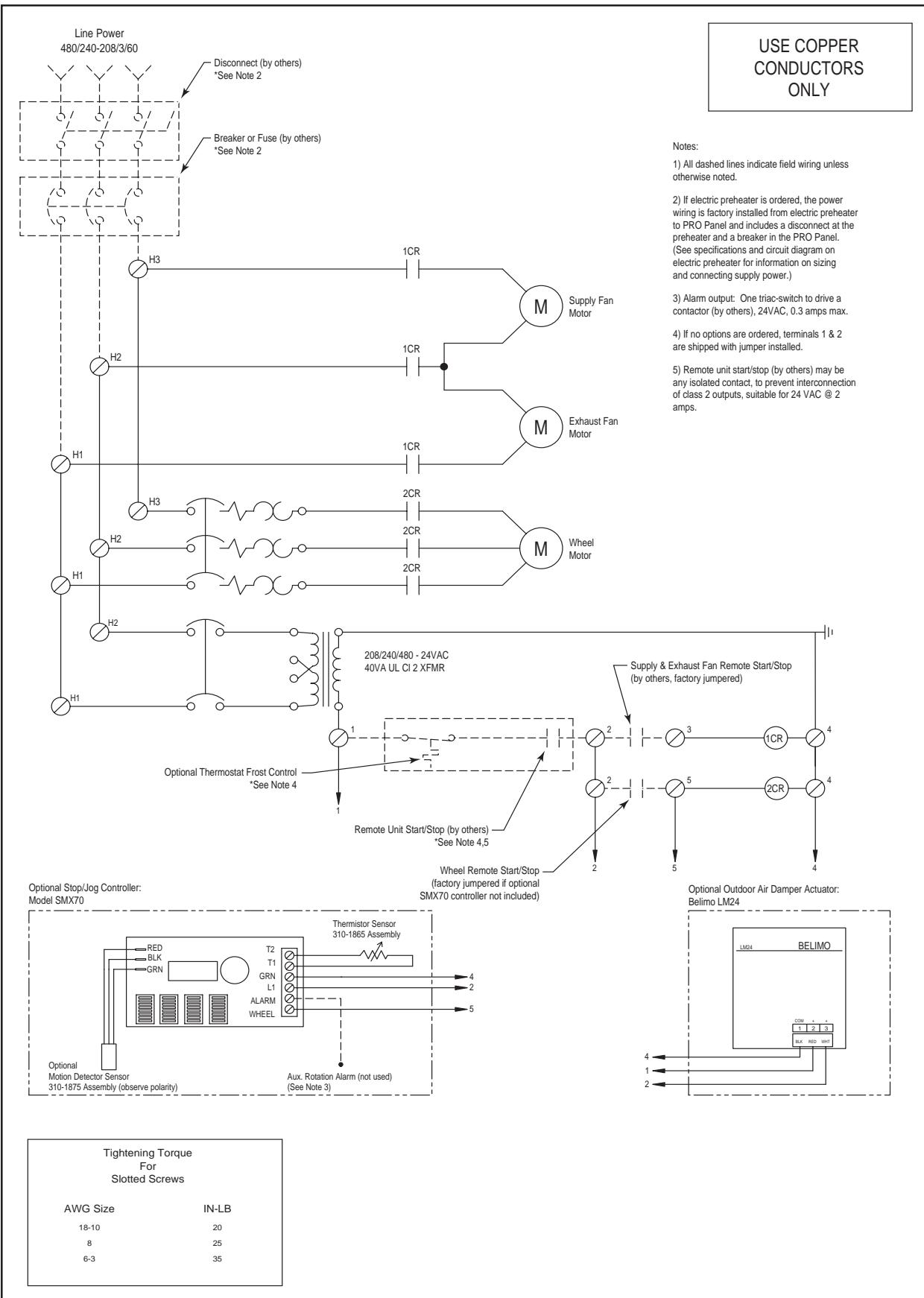


Figure 10. SMX70 Controller settings.

## Thermostat Frost Protection

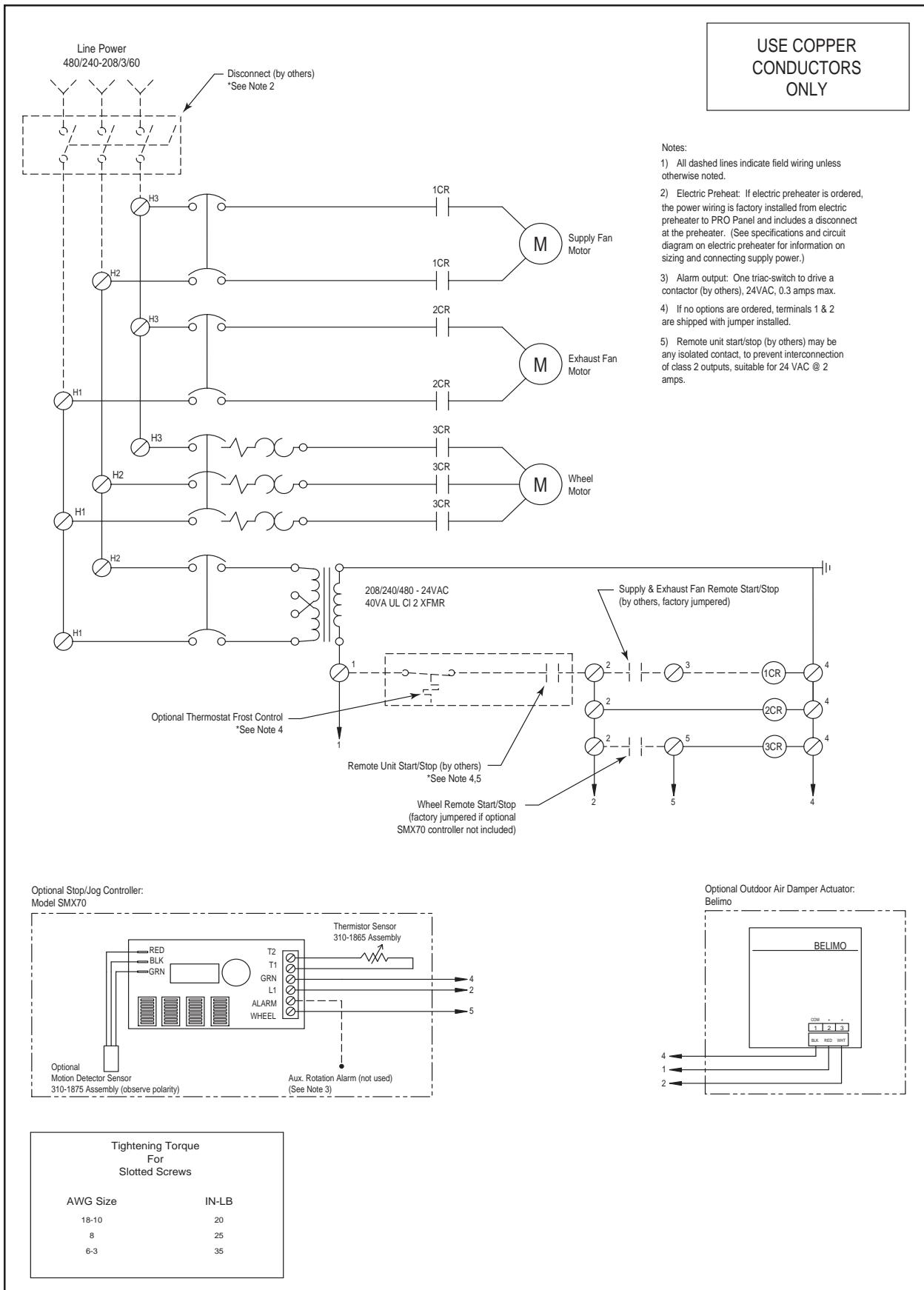
A lower cost solution to frost protection is to use a thermostat to turn the entire ventilation unit off during periods when the air is below the calculated frosting temperature. This should only be used in non-critical ventilation applications as no outdoor air will be supplied when the unit is switched off by the thermostat.

## 3Ø Circuit Diagram, Pro-6

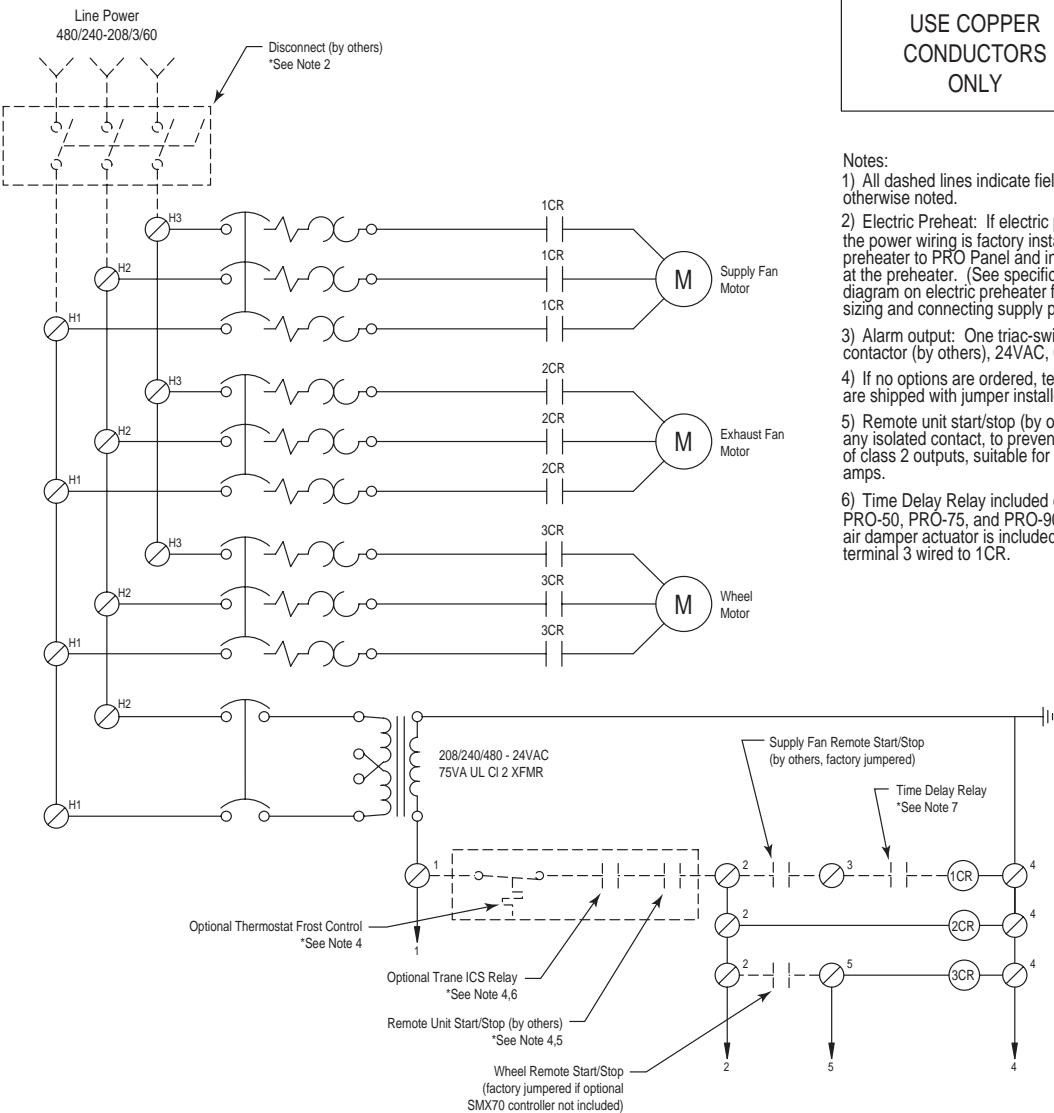


## 30 Circuit Diagram, Pro-10

USE COPPER  
CONDUCTORS  
ONLY



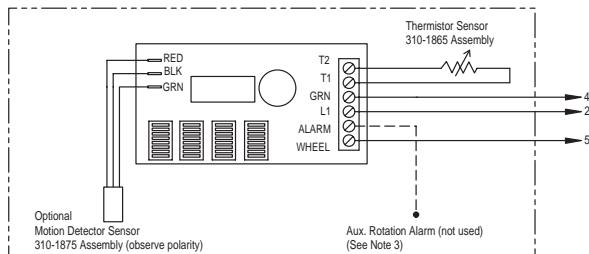
## 3Ø Circuit Diagram, Pro-20 through Pro-90



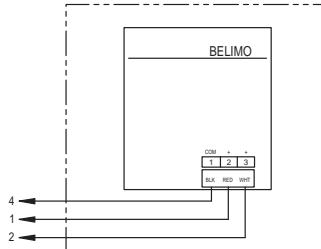
Notes:

- 1) All dashed lines indicate field wiring unless otherwise noted.
- 2) Electric Preheat: If electric preheater is ordered, the power wiring is factory installed from electric preheater to PRO Panel and includes a disconnect at the preheater. (See specifications and circuit diagram on electric preheater for information on sizing and connecting supply power.)
- 3) Alarm output: One triac-switch to drive a contactor (by others), 24VAC, 0.3 amps max.
- 4) If no options are ordered, terminals 1 & 2 are shipped with jumper installed.
- 5) Remote unit start/stop (by others) may be any isolated contact, to prevent interconnection of class 2 outputs, suitable for 24 VAC @ 3.5 amps.
- 6) Time Delay Relay included on PRO-30, PRO-40 PRO-50, PRO-75, and PRO-90 if optional outdoor air damper actuator is included. Otherwise, terminal 3 wired to 1CR.

Optional Stop/Jog Controller:  
Model SMX70



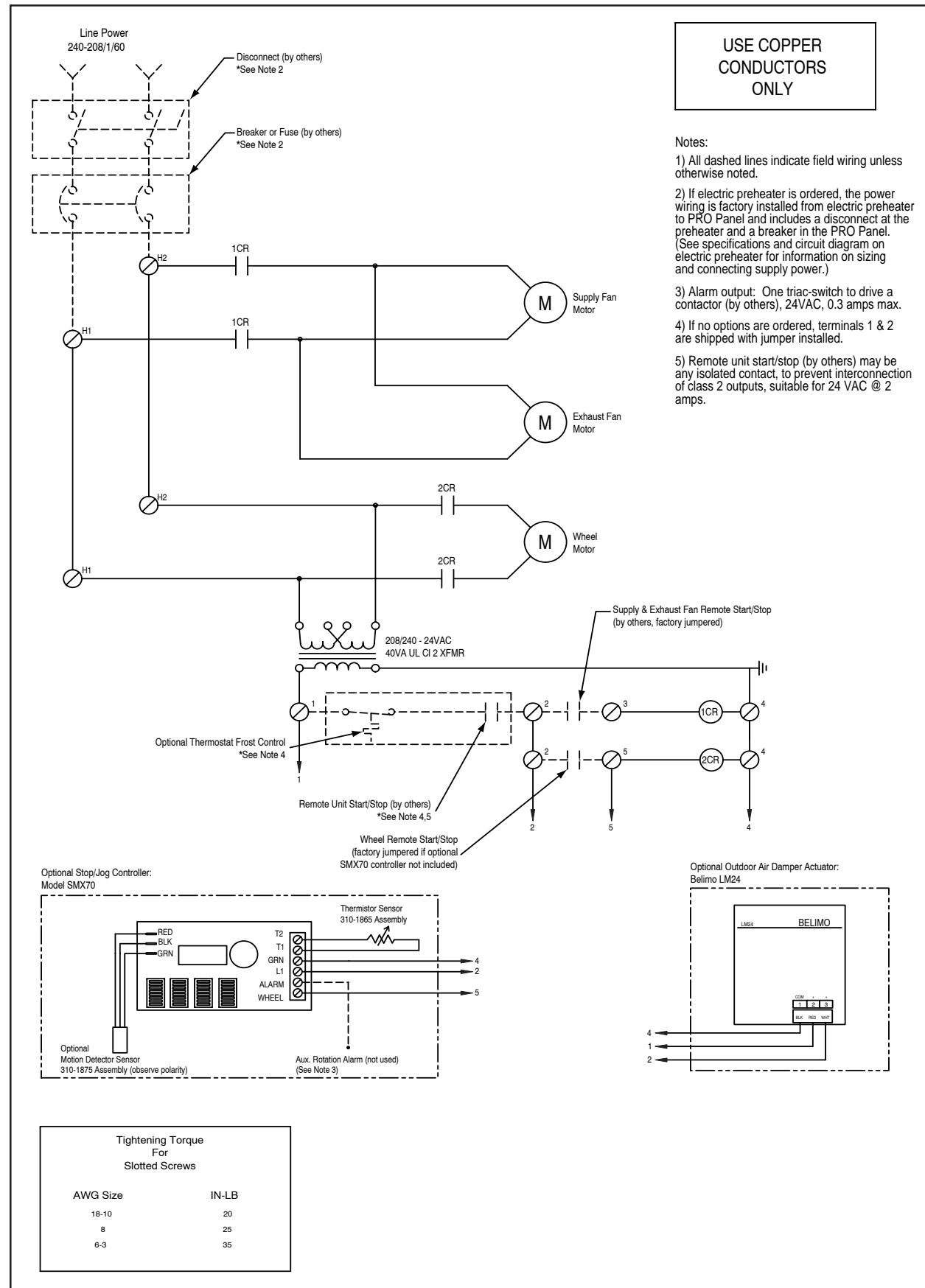
Optional Outdoor Air Damper Actuator:  
Belimo



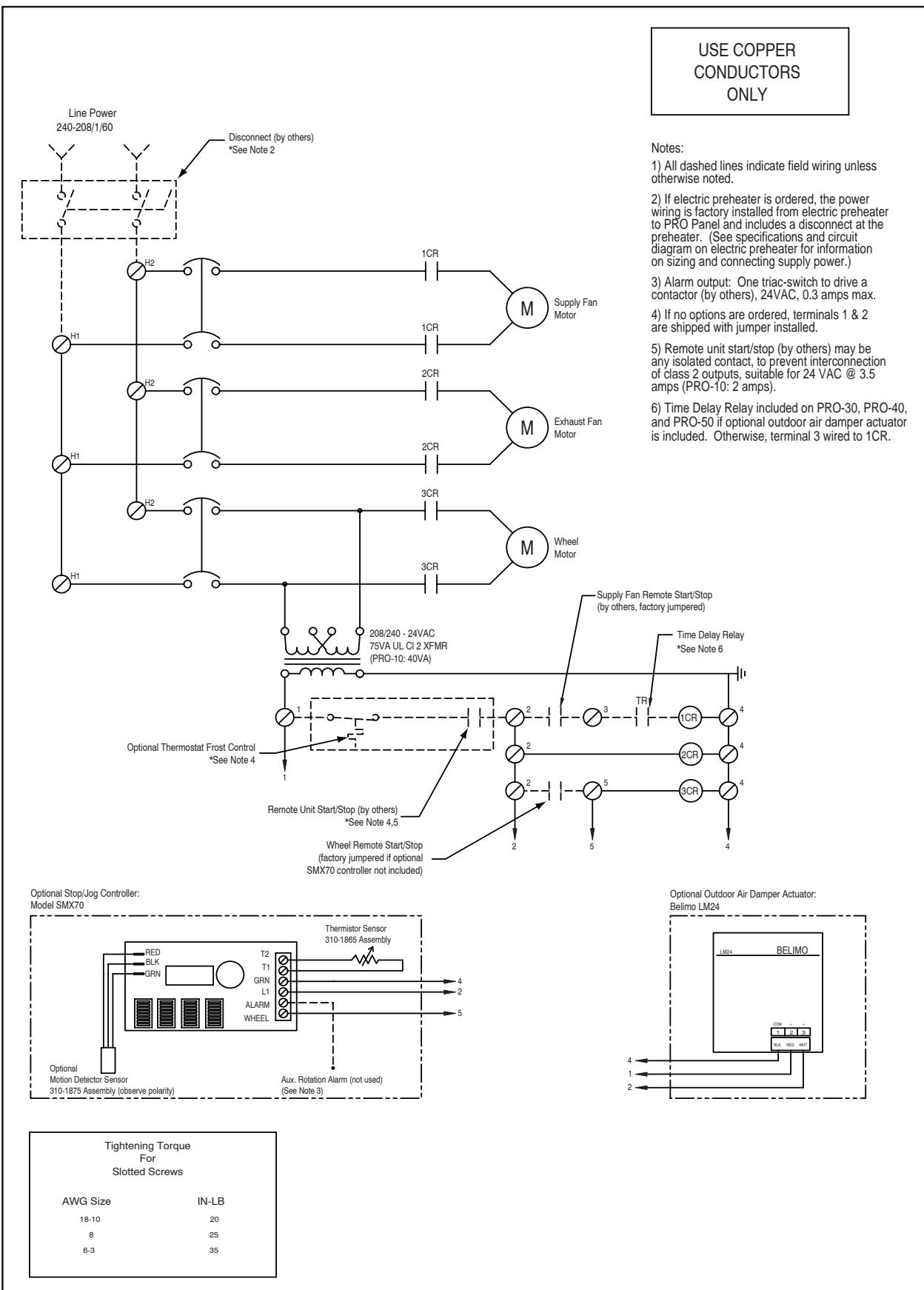
Tightening Torque  
For  
Slotted Screws

AWG Size	IN-LB
18-10	20
8	25
6-3	35

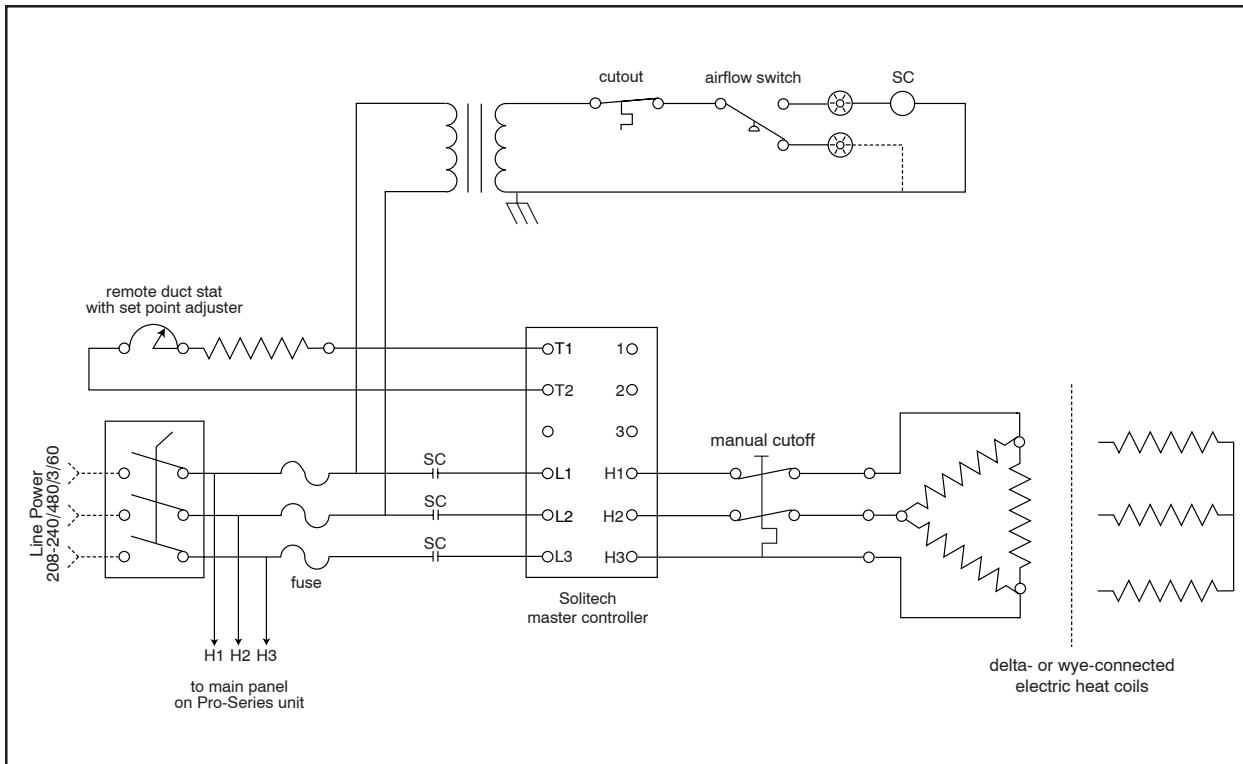
## 1Ø Circuit Diagram, Pro-6



## 10 Circuit Diagram, Pro-10 through Pro-50

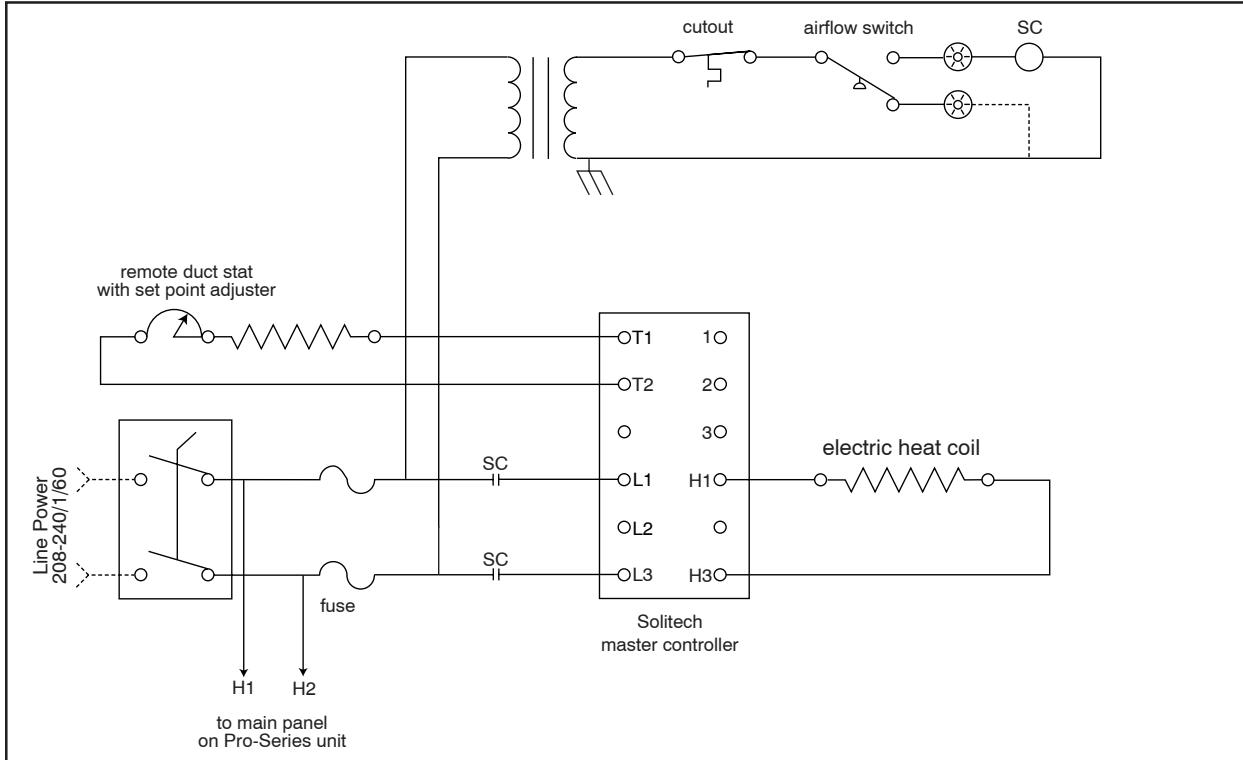


## 3Ø Electric Preheat Frost Control Circuit Diagram



Pro-Series

## 1Ø Electric Preheat Frost Control Circuit Diagram

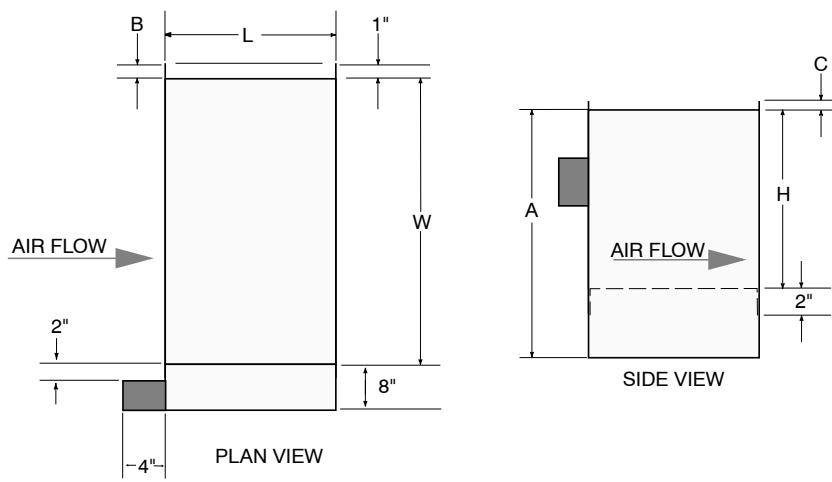
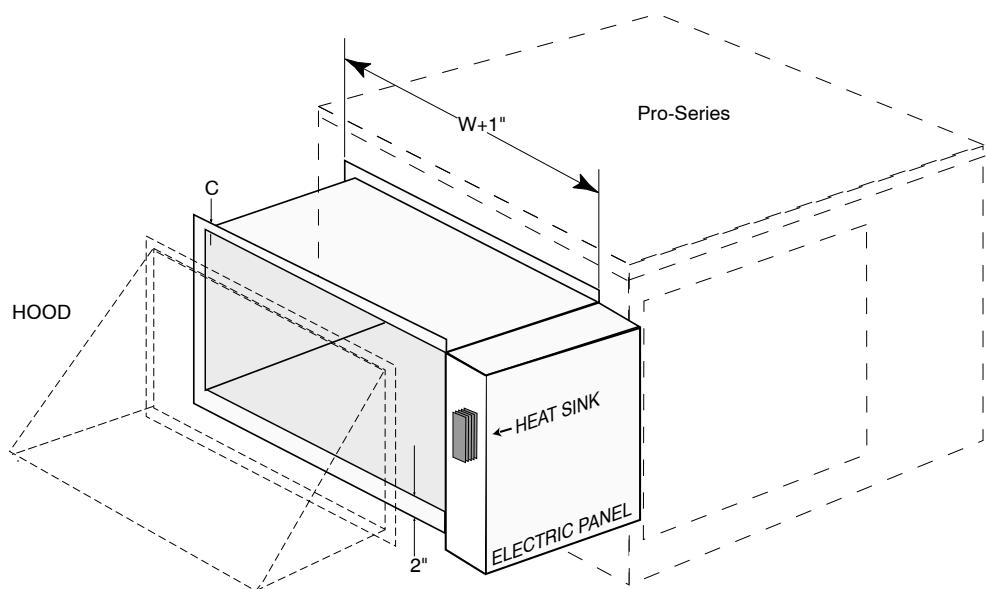


## Electric Preheat Layout

UNIT SIZE	W	H	L	A	B	C
Pro-6	24.4	9.0	14.0	20.0	1.0	1.0
Pro-10	24.4	9.0	14.0	20.0	1.0	1.0
Pro-20	31.1	11.0	14.0	20.0	1.0	2.0
Pro-30	39.1	16.0	20.0	40.0	1.0	2.0
Pro-40	49.1	17.0	20.0	40.0	1.0	2.0
Pro-50	49.1	17.0	20.0	40.0	1.0	2.0
Pro-75	56.0	24.0	20.0	40.0	3.0	2.0
Pro-90	56.0	24.0	20.0	40.0	3.0	2.0

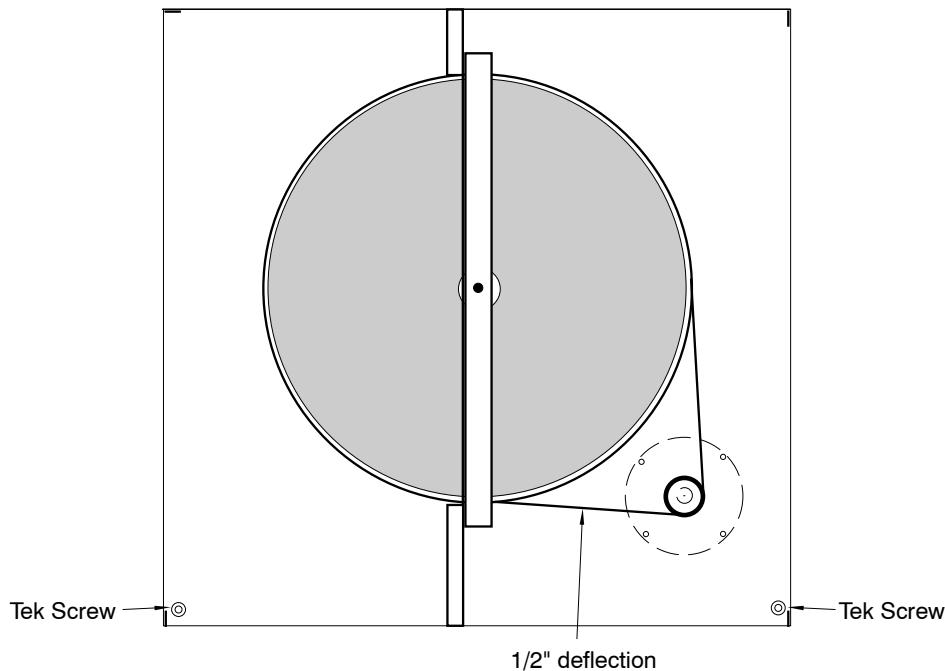
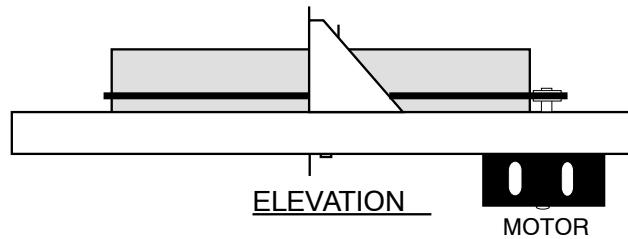
All dimensions in inches.

# Pro-Series



## Wheel Cassette

The wheel cassette can be serviced through the front panel. The cassette can be slid out for easy access. To remove the cassette, unplug the leads to the wheel drive motor, and remove the (2) tek screws located near the opening. This will then allow you to pull the cassette out of the unit through the access door. If the unit is equipped with a rotation sensor, it too must be removed prior to sliding the cassette out.



PLAN VIEW

MODEL	Pro-6	Pro-10	Pro-20	Pro-30	Pro-40	Pro-50	Pro-75	Pro-90
LINKBELT TYPE	4L/"A"							
BELT LENGTH	65"	81"	108"	134"	164"	164"	200"	200"

## Service

The Pro-Series module has a large access panel on the front of the unit. All maintenance can be performed through this panel. The unit should be installed with clearance in front of the unit at least equal to the unit depth to assure adequate access.

- All key components including fans and wheel cassette are removable through the service panel.
- The rotor is supported by permanently lubricated wheel bearings for minimal maintenance and long life.
- Electrical panels utilize breakers to eliminate the need for fuses (Pro-20 thru Pro-90 only).
- Fluted media structure provides for laminar flow through the wheel thereby avoiding media plugging due to dust and debris.
- Intake hood/filter limits snow and rain from entering the unit.

## Maintenance

**Filters** – The Pro-Series utilizes one-inch deep industrial grade aluminum mesh filters. The filters can be removed and washed. (See *Figure 11*.) We suggest that the filters be washed or replaced a minimum of once every four months. Replacement filters are readily available through ERV Systems, locally through HVAC supply distributors or McMaster-Carr.



**Figure 11.** Replacing the return air filter.

	Supply Air	Return Air
Pro-6	(1) 1x16x25	(1) 1x16x25
Pro-10	(1) 1x16x25	(1) 1x16x25
Pro-20	(2) 1x16x20	(2) 1x16x20
Pro-30	(3) 1x20x20	(2) 1x20x20
Pro-40	(4) 1x16x25	(3) 1x16x25
Pro-50	(4) 1x16x25	(3) 1x16x25
Pro-75	(6) 1x16x20	(6) 1x16x20
Pro-90	(6) 1x16x20	(6) 1x16x20

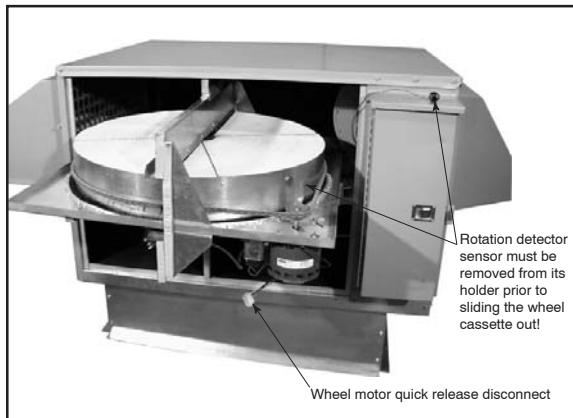
**Seals** – Surrounding the rim of the wheel is a brush seal. Do not tamper with this seal. No maintenance of the seal is required.

**Media** – For normal inspection and maintenance, the wheel cassette may be pulled out (like a drawer) of the metal enclosure of the unit. (See *Figure 12*.)

Because ERV Systems' heat wheels use laminar flow technology to resist plugging and the accumulation of dust particles, cleaning is usually not necessary. Constant back-flushing occurs due to incoming and outgoing air streams that move through media flutes to keep them clean. As the media moves constantly from one airstream to the other, most dirt is blown away. Some applications may require occasional rotor cleaning; those receiving a great particle load, for example. Under these circumstances, the media may be cleaned with a vacuum, pressurized air or hot water. However, detergents or solvents are not recommended. They may degrade the materials used to bind the desiccant to the aluminum surface in the media.



**Figure 12.** All key components including fans and wheel cassette are removable through the service panel.



**Figure 13.** Prior to sliding out the wheel cassette the wheel motor quick release must be disconnected and the rotation detector sensor must be unmounted.

**Belts** – The wheel drive system utilizes a PowerTwist® Plus™ belt. Periodic adjustment of the belt will be necessary. We suggest the belt be checked for sufficient tension at a minimum of once every six months. Take care to follow the directions on the following pages.

**Fan Bearings** (Pro-75 and Pro-90 only) – The fan bearings for the Pro-75 and Pro-90 require lubrication at a regular interval. Hours of operation, temperature and surrounding conditions will affect the lubrication frequency required. Therefore, when applying grease, observe the condition of the grease expelled from the bearings and note the amount of grease used. Both observations will suggest whether or not the lubrication schedule should be increased or decreased. Start with an initial monthly interval, and use a high quality NLGI No. 2, lithium soap grease with petroleum oil.

Also note that all bearings are originally filled with grease at the factory. When the fans are started, the bearings may discharge excess grease though the seals for a short period of time. If so, it is not necessary to replace this initial discharge. Lubricate bearings prior to extended shutdown or storage and rotate the shaft monthly to aid corrosion protection.

### Power Twist® Plus™ V-Belts

#### Measuring the Belt

- Pull belt tight around sheaves to check hand tight length, overlapping the last two tabs with two holes in matching links as shown in *Figure 14*.
- Count the number of links and remove one link for every 24 of O/3L, A/4L and B/5L sections and one link for every 20 of C section.

This gives the correct installed belt length and will ensure optimum belt tension when running. **Note:** Every tenth link is designated with an arrow.

For multiple belt drives, ensure that each belt has the same number of links.

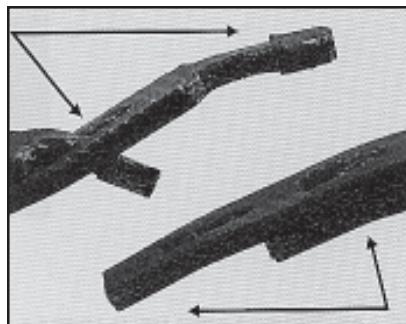
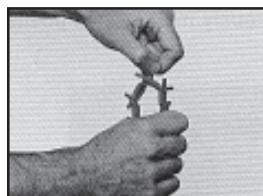
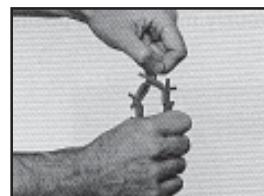


Figure 14.

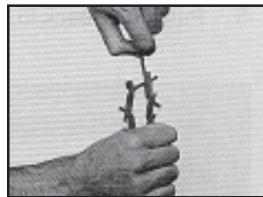
#### Disassembly



1. Hold belt upside down. Bend back as far as possible: hold with one hand. Twist one tab 90° parallel with slot.



2. Pull end of link over tab.



3. Rotate belt end with tab 90°.



4. Pull belt end through two links.

#### Assembly



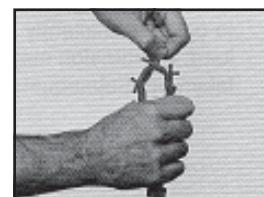
1. Hold belt with tabs pointing outward.



2. Place end tab through two links at once.



3. Flex belt further and insert second tab through end link by twisting tab with thumb.



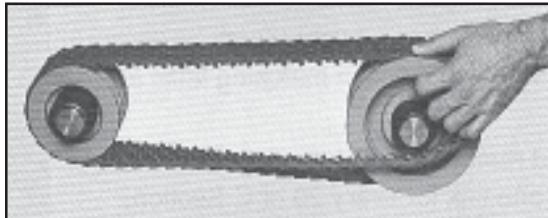
4. Ensure tab returns to position across belt. Reverse belt so tabs run inside.

**Note:** Turn belt inside out (as shown above) to ensure easy assembly and disassembly.

## Installation

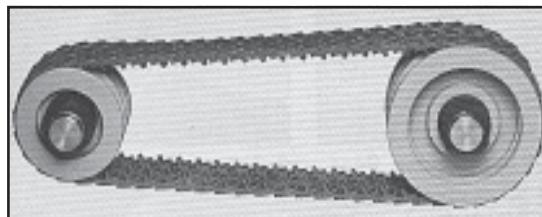
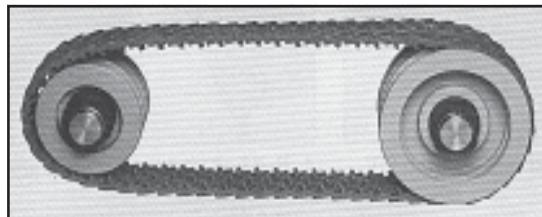
1. Turn belt with tabs to the inside before installing.
2. Determine direction of drive rotation.
3. Align belt directional arrow with drive rotation.
4. Fit belt in nearest groove of smaller sheave.
5. Roll belt onto larger sheave, turning the drive slowly. Belt may seem very tight; this is okay. DO NOT jog motor.
6. Check to see all tabs are still in their correct position and are not twisted out of alignment.
7. For multiple belt drives, work belt from groove to groove. On particularly wide drives, it may be easier to install half the belts from the inboard side and half from the outboard.

**Note:** With drive ratios around 1:1, it may be necessary to add back one link to allow belts to be rolled on. This does not apply if using Alternative Installation Method.



## Alternative Installation Method

1. Set motor to mid-position of adjustment range and mark base clearly.
2. Determine required belt length as in "Measuring Belt Length."
3. Push motor forward to minimum center distance.
4. Install belts as in "Installation."
5. Pull motor back to previously marked mid-position.



## Retensioning

Like all high-performance V-belts, PowerTwist® Plus™ V-Belts require the maintenance of correct drive tension to operate efficiently. Experience indicates that drive tension should be checked after 24 hours running at full load. Retensioning may be necessary depending on the severity of the drive. Any initial belt stretch is then taken up. Subsequently, belt tension should be checked periodically and adjusted when necessary.



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